Endangered Species Act - Section 7 Consultation
&
Magnuson - Stevens Act
Essential Fish Habitat Consultation

BIOLOGICAL REPORT

January 22, 2001

Fish Passage Remediation Program
Replacement and Retrofitting of Culverts and Stream Channel Modification
in Western and Central Oregon

Agency: Federal Highways Administration and designated non-Federal representative, Oregon Department of Transportation

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1. ENDANGERED SPECIES ACT

1.1. Scope and Approach

1.1.1. Background

The Oregon Department of Transportation (ODOT) is the designated non-Federal representative for transportation actions funded by the Federal Highway Administration (FHWA) in Oregon. On April 3, 1998, the National Marine Fisheries Service (NMFS) received a request from ODOT to develop a streamlining process to accomplish section 7 consultation for transportation projects involving fish passage remediation under the "Oregon Plan for Salmon and Watersheds." The programmatic biological assessment (BA) submitted with this request described three types of fish passage remediation projects: 1) Culvert retrofit; 2) construction of in-channel habitat structures and streambank protection; and 3) culvert replacement. On May 28, 1998, NMFS issued a biological report that analyzed the effects of those types of actions on salmon listed under the Endangered Species Act (ESA), and established a streamlined consultation process for these types of ODOT projects funded by the FHWA.

On January 4, 2000, ODOT submitted an addendum updating information presented in its 1998 programmatic BA. The addendum provided new information compiled since completion of the biological report regarding new listed species and designated critical habitats, the geographic and temporal scope of the proposed fish passage remediation program, the effects of new culvert installation technologies on listed species and critical habitats, an additional remediation action (i.e., bridge option), and measures intended to avoid or minimize the adverse effects of fish passage remediation projects on listed species and critical habitats. This biological report, in response to this new information, includes minor modifications to the reasonable and prudent measures and the terms and conditions in the incidental take statement.

The following listed species may occur within the action area:

Southern Oregon Northern California Coasts coho salmon	*Oncorhynchus kitsutch*
Oregon Coast coho salmon	*Oncorhynchus kitsutch*
Lower Columbia River steelhead	*Oncorhynchus mykiss*
Lower Columbia River chinook salmon	*Oncorhynchus tshawytscha*
Middle Columbia River steelhead	*Oncorhynchus mykiss*
Upper Willamette River chinook salmon	*Oncorhynchus tshawytscha*
Upper Willamette River steelhead	*Oncorhynchus mykiss*
Columbia River chum salmon	*Oncorhynchus keta*
Upper Columbia River Spring-run chinook	*Oncorhynchus tshawytscha*
Upper Columbia River steelhead	*Oncorhynchus mykiss*
Snake River Fall-run chinook salmon	*Oncorhynchus tshawytscha*
Snake River Spring/Summer-run chinook salmon	*Oncorhynchus tshawytscha*
Snake River sockeye salmon	*Oncorhynchus nerka*
Snake River Basin steelhead	*Oncorhynchus mykiss*

The programmatic BA describes categories of actions that include replacement and retrofitting of culverts and stream channel modification. The intent of these actions are to change the physical characteristics at the culvert and project site to provide flow and stream channel conditions that can easily be navigated by adult and juvenile salmonids. The proposed actions were determined to affect the species indicated above.

The effects determination was made using the methods described in Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale (NMFS 1996). This biological report considered the effects of each category of actions as they would be applied under the various circumstances and conditions. The process for evaluating specific projects, outlined in the project-specific BA and further defined in this report, will allow a more precise determination of effect.

This biological report is an integral part of the consultation process between the ODOT and the NMFS. It reflects the discussions and coordination that clearly define the scope of the work, specifies conservation measures, describes the process for providing project information to NMFS, and describes the methods for monitoring the effectiveness of the actions.

The objective of this biological report is to provide a basis for evaluating specific projects based on the programmatic BA (1998, 2000), information provided in an project-specific BA, and site-

specific project descriptions concerning the replacement and retrofitting of culverts and stream channel modifications to improve fish passage. Based on this report and project information from ODOT, NMFS will determine in separate documentation whether such projects are likely to jeopardize the continued existence, adversely modify designated critical habitat, or adversely affect Essential Fish Habitat (EFH) for those species indicated above.

1.1.2. Project Review Process

The programmatic approach outlined in this biological report allows for review of individual or batched actions that meets the criteria presented in the programmatic BA. The process involves submitting a project-specific BA that provides project specific details of the proposed action. The project-specific BA provides the necessary biological parameters to form the basis of the consultation. The project-specific BA will provide an analysis of site-specific baseline conditions. Through this approach, ODOT requested that the consultation process be reduced to 30 days based on the limited scope of the actions, the anticipated and predictable effects, and the general acknowledgment of the need and purpose of the actions.

Each proposed project will be initially screened. The consultation process described herein is applicable to those ODOT fish passage remediation actions that meet the criteria presented in the programmatic BA. For each project that meets the initial criteria, additional specific information will be provided in a project-specific BA and shall include the following:

Project Location:	a short description, location map (1:24,000 preferred), and the watershed that the project is located.
Action Area:	define the action area (area of impacts, both direct and indirect, and interrelated).
Project Photographs:	site-specific photos that show the site conditions.
Fish Passage Problem:	the conditions which impair fish passage, how these conditions were assessed, and the extent of upstream habitat that will be affected. [if the result of ODFW (Oregon Department of Fish and Wildlife) survey, cross reference to survey data].
Project Design:	the preferred design to correct fish passage problem including the specific objectives and site-specific drawings.
De-watering:	provide specifics, to include drawings, on how streams will be de-watered or temporarily rerouted.
Site-specific Analysis of Effects:	direct, indirect, and interrelated effects, to include temporal and spatial analysis of effects.

Take:	quantify and discuss any potential for take (e.g., fish removal methods and handling, and habitat alteration).
Baseline Conditions:	describe the existing (pre-project) environmental baseline conditions, and how the environmental baseline (post-project) will be maintained or restored in the action area.
New Impervious Surface:	identify if the project creates any new impervious surface, and how water quality and quantity will be treated.
Existing Stream Conditions:	e.g., flow (hydrograph), order, type, condition, habitat structure.
Vegetation Removal:	quantify amount of vegetation being removed, to include area and proximity to waterbodies. For trees include species, size (height and DBH), and quantity.
Riprap:	provide information on class and quantity, and amount to be placed above and amount below the Ordinary High Water Mark (OHWM).
Staging Areas:	provide information on the area, proximity to waterbodies, and impacts associated with activities that will occur within the staging area (e.g., refueling, vegetation clearing).
Access Roads:	provide specific information on the location and the impacts associated with the action.
Detour Roads:	describe location and impacts associated with the construction and de-construction.
Stockpile Sites:	location of all stockpile sites and any associated impacts
Critical Habitat:	describe impacts to constituent elements and functions.
Essential Fish: Habitat	if the project lies within the EFH boundary for Pacific salmon, ground fish, and/or pelagic species, provide an analysis of whether the action will have an adverse affect on EFH.
Project Approach:	specific construction methods that will be used to complete work, including facility demolition, in-water work, and site remediation.
Effects Determination:	likelihood that the project will adversely or not adversely affect those species that are listed as threatened or endangered under the ESA and the basis for making this determination (matrix checklist may be used -- NMFS 1996); determination for designated critical habitat - destruction or adverse modification.

NMFS will conclude the consultation for each individual or batched action in writing within 30 days of receiving a complete project-specific BA or provide a written response to ODOT regarding the circumstances that precludes completing the process and an approximate time for concluding the consultation.

1.1.3. Individual Project Monitoring

ODOT will inspect and monitor all actions for which consultation has been completed in accordance with the process described in the programmatic BA and the biological report. The inspection and monitoring criteria are incorporated into the terms and conditions described in the incidental take section of this report.

1.2. Proposed Actions

The proposed actions for replacing or modifying road culverts, or modifying stream channels to improve fish passage are described below. For each individual project undertaken, the actual fish passage solution may involve one or many of these actions. The extent of the application of each of these general actions to an individual project will vary and will be provided in the project-specific BA.

1.2.1. Actions by Category

1.2.1.1. Culvert Replacement and Installation

This action consists of replacing existing culverts that are adversely affecting fish passage or installing additional culverts that will allow fish passage. Culvert replacement and installation may be necessary where other actions for modifying an existing culvert or stream channel to improve fish passage are not practicable. Culvert replacement and installation may involve conventional trenching, trenchless pipe ramming, or horizontal directional drilling methods and technologies.

Conventional trenching requires excavation of the road-base and embankment, and requires the use of heavy equipment working in close proximity to the stream. Roadbed material will be side-cast (temporarily and above the OHWM) to allow direct access to the existing culvert. The existing culvert may be pulled out of the road-base to allow the new culvert to be placed, or the new culvert may be placed in parallel and offset from the existing culvert prior to pulling the existing culvert. New culverts would be designed to be consistent with ODFW fish passage criteria (ODFW 1997). Typical fish friendly designs will tend to incorporate larger, flat or natural bottomed culverts (BC Forest Practice Code 1997). These designs may require additional excavation and site preparation.

Trenchless pipe ramming technology creates an underground opening by excavating the ground at the leading edge of a boring machine. This method requires that the boring machine have

adequate space to operate for successful installation. Essentially, this method requires the construction of a launching surface in the stream channel that is in proper alignment, grade, and depth with the existing streambed. This method requires construction of an access road and one or more temporary stockpile sites. Natural substrate may be temporarily side-cast, above the OHWM.

Directional drilling requires access to the road embankment and sufficient space to operate heavy equipment. Directional drilling installs the culvert directly into the embankment without the need to excavate from ground level. This method requires construction of an access road and one or more temporary stockpile sites. Natural substrate may be temporarily side-cast, above the OHWM. This action may require equipment to operate within the stream channel. The new culvert would be placed during the excavation operation.

Culvert replacement and installation which involves flowing water would require additional steps to isolate flow from the actual work site. Streams may be diverted through temporary culverts until the new permanent culvert is in place, or may be maintained in the existing culvert until the new culvert is in place, then diverted into the new culvert. Additionally, all vegetated areas that are cleared within the riparian corridor will have a replanting plan which is appropriate for the local overstory and understory plant community. The replanting plan will emphasize endemic riparian species.

1.2.1.2. Stream Channel Modification

Modifying the stream channel by constructing weirs, placing in-stream boulders, installing bank protection, or building fishways may be necessary where culverts have become elevated or separated from the stream channel. Stream channel structures and bank protection are intended to reconnect the stream to the culvert by creating instream pools, instream flow deflectors, and stabilizing and protecting the stream channel relative to the culvert. This action involves inwater construction and placement of structures composed of rock, concrete, and/or logs (BC Forest Practice Code 1997). The intent of the stream channel modification is not to provide streambank stabilization or alter the course of the channel to protect road facilities, but to provide adequate fish passage. Additionally, all vegetated areas cleared within the riparian corridor will have a replanting plan which is appropriate for the local overstory and understory plant community. The replanting plan will emphasize endemic riparian species.

1.2.1.2.1. Weirs

Weirs may be placed in the stream as a means to create pools and raise the water level of the stream at the culvert. Weirs are constructed downstream of the culvert. There may be one to many weirs to create a series of pools. They will typically cross the stream bank-to-bank. The weirs may be constructed of rock, concrete, logs, or a combination of materials. The weirs restrict water flow and will raise the water levels upstream from the weir. The weirs are designed

to allow fish to move up and downstream at various water levels by incorporating low points in the structures, notches or openings, that concentrate low flows and will allow fish to migrate.

1.2.1.2.2. Boulders/Deflectors

In-channel boulders or deflectors may be used in the stream channel to create localized flow reversals, eddy currents, and low velocity points within the channel where weirs would not be practicable. Placed irregularly and in series, in-channel boulders and deflectors will allow fish to navigate up through short and constructed stream reaches that may be associated with road culverts.

1.2.1.2.3. Fishways

Fishways may be used where other modification of the stream channel can not effectively restore fish passage, primarily where there is a substantial elevation difference between culvert and stream. A fishway is a constructed channel with small sills and baffles. Structural elements that are perpendicular to stream flow that back up and redirect flows creating in-channel pools and flow velocity reductions. Fishways are constructed of various materials and may be integrated into the culvert outlet.

1.2.1.2.4. Bank Protection

Bank protection is used to stabilize and protect either added channel structures, culvert inlets or outlets, or stream channels directly. Modification to the stream channel by adding various structures will change stream hydrodynamics and increase erosion potential at the point of change. As a result of the stream channel modifications, the streambank may need to be protected from erosion. Where stream channel migration has resulted in separation of the stream and culvert and impairment of fish passage, it may be necessary to constrain the stream movement. Bank protection involves the placement of bioengineered riprap (preferably upland, non-angular rock), logs, and/or establishment of streambank vegetation.

1.2.1.3. Culvert Retrofit

This work includes installing devices that modify the flow and depth of water within the culvert. Culvert retrofit may be used when fish passage is impaired due to high velocity flows and/or shallow depths. The structures may consist of metal framework with cross members that are oriented at various angles across the stream. These frameworks may be easily attached to existing metal corrugated culverts. These structures disrupt smooth flows and act to deflect or trap bed-load material being moved by the stream. Baffles are small offset blocks that deflect, and concentrate flows and maintain depths. They are constructed of concrete, preformed or poured, or plastic material. These baffles are placed and anchored in the bottoms of box culverts. Baffles do not completely block the flows across the bottom of the culvert (BC Forest Practice Code 1997). Additionally, all vegetated areas cleared within the riparian corridor will have a

replanting plan which is appropriate for the local overstory and understory plant community. The replanting plan will emphasize endemic riparian species.

1.2.1.4. Culvert Replacement - Bridge Option

Replacement of culverts with a bridge (single span) may occur where the culvert has failed on a continuum, or where culvert replacement would not provide longterm fish passage. Project activities would include excavation of the roadbed, embankment, and the existing culvert, stream channel modification and rehabilitation, construction of the bridge super and sub-structure, construction of approaches, clearing, grading and filling, and stabilization of streambanks. Additionally, all vegetated areas cleared within the riparian corridor will have a replanting plan which is appropriate for the local overstory and understory plant community. The replanting plan will emphasize endemic riparian species.

1.2.2. Individual Project-Specific Actions

Project specific actions will be defined in the project-specific BA and are composed of a combination of one or many of the categories of actions described above. Specific designs have been based on an evaluation of the culvert characteristics and conditions that have been determined to impair fish passage. Each individual project has been identified based on criteria for fish passage for adult and juvenile salmonids as described in the ODFW guidelines (ODFW 1997). Most of the proposed projects are the result of field surveys conducted by ODFW (1997a, 1997b).

1.3. Biological Information, Critical Habitat, And Take Prohibitions

The listing status, biological information, and critical habitat elements for the indicated species are identified and referenced in Table 1 below.

Table 1. References to Federal Register Notices containing additional information concerning listing status, biological information, and critical habitat designations for listed species considered in this biological report.

Species (Biological References)	Listing Status Reference	Critical Habitat Reference
Southern Oregon Northern California Coasts coho salmon (Nehlsen et. al. 1991; Nickelson et. al. 1992; Weitkamp et. al. 1995)	The Southern Oregon Northern California Coasts coho salmon ESU was listed as threatened under the ESA by the NMFS (May 6, 1997; 62 FR 24588).	Critical habitat designated May 5, 1999 (64 FR 24049). Critical habitat is designated to include all river reaches accessible to listed coho salmon between Cape Blanco, Oregon and Punta Gorda, California.
Oregon Coast coho salmon (Nehlsen et. al. 1991, Nickelson et. al. 1992, Weitkamp et. al. 1995).	The Oregon Coast coho salmon ESU was listed as threatened under the ESA by the NMFS (August 10, 1998; 63 FR 4258).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches and estuarine areas accessible to listed coho salmon from coastal streams south of the Columbia River and north of Cape Blanco, Oregon.
Lower Columbia River steelhead (Busby et. al. 1995; Busby et. al. 1996).	The Lower Columbia River steelhead ESU was listed as threatened under the ESA by the NMFS (March 19, 1998, 63 FR 13347).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed steelhead in Columbia River tributaries between the Cowlitz and Wind Rivers in Washington and the Willamette and Hood Rivers in Oregon, inclusive.
Upper Willamette River steelhead (Busby et. al. 1995; Busby et. al. 1996).	The Upper Willamette River steelhead ESU was listed as threatened under the ESA by the NMFS (March 25, 1999; 64 FR 14517).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed steelhead in the Willamette River and its tributaries above Willamette Falls upstream to, and including, the Calapooia River.
Columbia River chum salmon (Johnson et.al. 1997; Salo 1991).	The Columbia River chum salmon ESU was listed as threatened under the ESA by the NMFS (March 25, 1999; 64 FR 14508).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed chum salmon (including estuarine areas and tributaries) in the Columbia River downstream from Bonneville Dam, excluding Oregon tributaries upstream of Milton Creek at river km 144 near the town of St. Helens.
Upper Willamette River chinook salmon (Myers et. al. 1998; Healey 1991).	The Upper Willamette River chinook salmon ESU was listed as threatened under the ESA by the NMFS (March 24, 1999; 64 FR 14308).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed chinook salmon in the Clackamas River and the Willamette River and its tributaries above Willamette Falls.
Lower Columbia River chinook salmon (Myers et. al. 1998; Healey 1991).	The Lower Columbia River chinook salmon ESU was listed as threatened under the ESA by the NMFS (March 24, 1999; 64 FR 14308).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed chinook salmon in Columbia River tributaries between the Grays and White Salmon Rivers in Washington and the Willamette and Hood Rivers in Oregon, inclusive.

Species (Biological References)	Listing Status Reference	Critical Habitat Reference
Middle Columbia River steelhead (Busby et. al. 1996).	The Middle Columbia River steelhead ESU was listed as threatened under the ESA by the NMFS (March 25, 1999; 64 FR 14517).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed steelhead in Columbia River tributaries (except the Snake River) between Mosier Creek in Oregon and the Yakima River in Washington (inclusive).
Upper Columbia River Spring-run chinook salmon (Meyers et.al. 1998).	Upper Columbia River Spring-run chinook salmon ESU was listed as Endangered under the ESA by the NMFS (March 24, 1999; 64 FR 14308).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed chinook salmon in Columbia River tributaries upstream of the Rock Island Dam and downstream of Chief Joseph Dam in Washington, excluding the Okanogan River. Also included are adjacent riparian zones, as well as river reaches and estuarine areas in the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) upstream to Chief Joseph Dam in Washington.
Snake River Fall-run chinook salmon (Waples, R.S., R.P. Jones, Jr., B.R. Beckman, and G.A. Swan. 1991).	Snake River Fall-run chinook salmon ESU was listed as threatened under the ESA by the NMFS (April 22,1992, 57 FR 14654).	Critical habitat designated on December 28, 1993 (58 FR 68543). Critical habitat for the listed ESU is designated to include river reaches presently or historically accessible (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dams) to Snake River fall chinook salmon in the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) and including all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake Rivers; the Snake River, all river reaches from the confluence of the Columbia River, upstream to Hells Canyon Dam; the Palouse River from its confluence with the Snake River upstream to Palouse Falls; the Clearwater River from its confluence with the Snake River upstream to its confluence with Lolo Creek; the North Fork Clearwater River from its confluence with the Clearwater River upstream to Dworshak Dam.

Species (Biological References)	Listing Status Reference	Critical Habitat Reference
Snake River Spring/Summer -run chinook salmon (Meyers et.al. 1998, Mathews et.al. 1991).	Snake River Spring/Summer -run chinook salmon ESU was listed as threatened under the ESA by the NMFS (April 22,1992, 57 FR 14654).	Critical habitat designated on December 28, 1993 (58 FR 68543); revised October 25, 1999 (64 FR 57399). Critical habitat is designated to include river reaches presently or historically accessible (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dams) to Snake River spring/summer chinook salmon in the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) and including all Columbia River estuarine areas and river reaches proceeding upstream to the confluence of the Columbia and Snake Rivers; all Snake River reaches from the confluence of the Columbia River upstream to Hells Canyon Dam.
Upper Columbia steelhead (Busby et. al. 1997).	The Upper Columbia steelhead ESU was listed as Endangered under the ESA by the NMFS (August 18, 1997, 62 FR 43937).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed steelhead in Columbia River tributaries upstream of the Yakima River, Washington, and downstream of Chief Joseph Dam.
Snake River sockeye salmon (Gustafson, R.G., T.C. Wainwright, G.A. Winans, F.W. Waknitz, L.T. Parker, and R.S. Waples. 1997).	Snake River sockeye salmon ESU was listed as endangered under the ESA by the NMFS (November 20, 1991, 56 FR 58619).	Critical habitat designated on December 28, 1993 58 FR 68543). Description - Critical habitat is designated to include river reaches presently or historically accessible (except reaches above impassable natural falls, and Dworshak and Hells Canyon Dams) to Snake River sockeye salmon in the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) and including all Columbia River estuarine areas and river reaches upstream to the confluence of the Columbia and Snake Rivers; all Snake River reaches from the confluence of the Columbia River upstream to the confluence of the Salmon River; all Salmon River reaches from the confluence of the Snake River upstream to Alturas Lake Creek; Stanley, Redfish, Yellow Belly, Pettit, and Alturas Lakes (including their inlet and outlet creeks); Alturas Lake Creek, and that portion of Valley Creek between Stanley Lake Creek and the Salmon River.
Snake River Basin steelhead (Busby et. al. 1997).	Snake River Basin steelhead ESU was listed as threatened under the ESA by the NMFS (August 18, 1997, 62 FR 43937).	Critical habitat designated February 16, 2000 (65 FR 7764). Critical habitat is designated to include all river reaches accessible to listed steelhead in the Snake River and its tributaries in Idaho, Oregon, and Washington. Also included are adjacent riparian zones, as well as river reaches and estuarine areas in the Columbia River from a straight line connecting the west end of the Clatsop jetty (south jetty, Oregon side) and the west end of the Peacock jetty (north jetty, Washington side) upstream to the confluence with the Snake River.

1.3.1 Take Prohibitions

Section 4(d) of the ESA allows for the promulgation of regulations to provide for the conservation of listed species.

Effective November 20, 1991 protective measures under section 4(d) of the ESA are applicable for Snake River sockeye salmon. Effective April 22, 1992 protective measures under section 4(d) of the ESA are applicable for Snake River Spring/Summer and Fall chinook salmon. Effective September 8, 2000, protective measures under section 4(d) of the ESA are applicable for Lower Columbia River steelhead, Middle Columbia River steelhead, Snake River Basin steelhead, and Upper Willamette River steelhead. Take prohibitions for Southern Oregon Northern California Coasts coho salmon, Oregon coast coho salmon, Lower Columbia River chinook salmon, Upper Willamette River spring chinook salmon, and Columbia River chum salmon are applicable January 8, 2001. The final rule (65 FR 42422) applies prohibitions enumerated in section 9(a)(1) of the ESA.

1.4. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by 50 CFR Part 402 (the consultation regulations). NMFS must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of defining the biological requirements and current status of the listed species and evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NMFS evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NMFS must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action, (2) the environmental baseline, and (3) any cumulative effects. This evaluation must take into account measures for survival and recovery specific to the listed salmon's life stages that occur beyond the action area. If NMFS finds that the action is likely to jeopardize the listed or proposed species, NMFS must identify reasonable and prudent alternatives for the action.

Furthermore, NMFS evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' proposed or designated critical habitat. The NMFS must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. The NMFS identifies those effects of the action that impair the function of any essential element of critical habitat. The NMFS then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NMFS concludes that the action will destroy or adversely modify critical habitat, it must identify reasonable and prudent alternatives for the action.

For the proposed action, NMFS' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NMFS' critical habitat analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of the species listed above under the existing environmental baseline.

This application involves defining the biological requirements of the listed species; evaluating the relevance of the environmental baseline to the species' current status; determining the effects of the proposed or continuing action on listed species; determining whether the species can be expected to survive with an adequate potential for recovery under the effects of the proposed or continuing action, the environmental baseline and any cumulative effects, and considering measures for survival and recovery specific to other life stages; and identifying reasonable and prudent alternatives to a proposed or continuing action that is likely to jeopardize the continued existence of the listed species. If NMFS finds that the action is likely to jeopardize, NMFS must identify reasonable and prudent alternatives for the action.

1.4.1. Biological Requirements

NMFS finds that the biological requirements of the listed and proposed ESUs are best expressed in terms of environmental factors that define properly functioning freshwater aquatic habitat necessary for survival and recovery of the ESUs. Individual environmental factors include water quality, habitat access, physical habitat elements, and channel condition. Properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are also necessary for the survival and recovery of the listed and proposed ESUs.

1.4.2. Environmental Baseline

The current range-wide status of the identified ESUs under the environmental baseline is referenced in Table 1. The identified actions will occur throughout the range of the species indicated above. The defined action area for each proposed action is the area that is directly and indirectly affected. The direct effects occur at the project site and may extend upstream or downstream based on the potential for impairing fish passage, hydraulics, sediment and other pollutant discharge, displacement of listed fish, and the extent of riparian habitat and stream channel modifications. Indirect effects may occur throughout the watershed where actions described in this biological report lead to additional activities or affect ecological functions contributing to aquatic habitat degradation. As such, the action area for the proposed activities include the immediate watershed containing the project and those areas upstream and downstream that may reasonably be affected, temporarily or in the long term. For this consultation, the action area is western and central Oregon. Project-specific action areas are more limited geographically to the watershed area commonly referred to as the 5th field HUC (Hydrologic Unit Code, a numeric hierarchical classification of water drainage basins developed by the US Geological Survey). The action area for individual projects will be defined in the project-specific BA.

Based on the best available scientific and commercial information on the current status of the subject species (referenced in Table 1), and the poor environmental baseline conditions within the action area, NMFS concludes that the biological requirements of the subject species identified within the action area are not generally being met. Habitat access within the action area is impaired. Improvement in habitat conditions is needed to meet the biological requirements for survival and recovery of the subject species. Actions that do not maintain or restore properly functioning aquatic and riparian habitat conditions would be likely to jeopardize the continued existence of anadromous salmonids.

1.5. Analysis of Effects

The effects determination in this biological report was made using a method for evaluating current aquatic conditions, the environmental baseline, and predicting effects of actions on them. This process is described in the document "Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (NMFS 1996). This assessment method was designed for the purpose of providing adequate information in a tabular form for NMFS to determine the effects of actions subject to consultation. The effects of actions are expressed in terms of the expected effect -- restore, maintain, or degrade -- on aquatic habitat factors in the action area. For each individual action covered in this report, the effects on aquatic habitat factors and to the subject species can be limited by utilizing construction methods and approaches that are intended to minimize impacts.

For each of the category of actions described below, NMFS expects that the effects will tend to maintain or restore each of the habitat elements over the long term, greater than one year. The potential effects from the sum total of proposed actions are expected to restore properly functioning fish passage on site and not further degrade the environmental baseline within the project-specific action areas. The programmatic BA presents a summary of effects. Temporary, short-term effects include increased sedimentation and turbidity, temporary loss of riparian vegetation, disturbance to the stream channel and banks, handling of listed fish associated with removal of the subject species from project-specific, isolated work areas (i.e., coffer dams, block netted areas, etc.), and displacement of listed fish. Long-term effects include improvement of fish passage and increased habitat access to salmonid spawning and rearing habitats.

The effects of the actions will be minimized by using best management practices as indicated in Attachment 1(ODOT's General Minimization and Avoidance Measures, as modified for this report), and implementing the reasonable and prudent measures identified in Section Two of this report. In particular, instream work will be conducted during the preferred inwater work period established by the ODFW, or as otherwise directed by ODFW or NMFS; an erosion protection plan will be implemented; and disturbance to riparian vegetation, and streambanks and the streambed will be limited to that essential to completing the work. Fish passage will be restored as a result of the action and access to upstream spawning and rearing habitat will be reestablished. Additional compensatory mitigation may involve riparian and stream habitat restoration within the project-specific watershed.

1.5.1. Effects of Actions by Category

1.5.1.1. Culvert Replacement and Installation

Culvert replacement and installation will occur within various streams throughout western and central Oregon. Culvert replacement would occur where the existing culvert is particularly steep and narrow and/or the existing culvert is substantially elevated from the streambed. The expected impacts from this action include temporary increases in sedimentation and turbidity, modification to the hydrology, temporary loss of riparian vegetation, streambank alteration, temporary displacement of listed fish, handling of listed fish associated with removal of the subject species from project-specific, isolated work areas (i.e., coffer dams, block netted areas, etc.), and long-term improvement to fish passage and habitat access.

Particular attention will be given to controlling fine sediment discharge from the excavated materials that remain on site and to monitoring the operation of heavy equipment adjacent to and within the stream, isolating the work area (de-watering), and moving fish according to methods described in the project-specific BAs. Riparian habitat will be restored through planting of native vegetation. Fish passage will be restored as a result of the action with access to upstream spawning and rearing habitats.

1.5.1.2. Stream Channel Modification

Stream channel modification will occur within various streams throughout western and central Oregon. This proposed action will include lower gradient streams with established flood plain areas. The expected impacts from this action include temporary increases in sedimentation and turbidity, temporary disruption of bed-load movement of gravel, modification to the hydrology, temporary displacement of listed fish, handling of listed fish associated with removal of the subject species from project-specific, isolated work areas (i.e., coffer dams, block netted areas, etc.), streambank alteration, temporary loss of riparian vegetation, and long-term improvement to fish passage and habitat access, and hydraulic functions.

Particular attention will be given to controlling fine sediment discharge from the excavated materials that remain on site and to monitoring the operation of heavy equipment adjacent to and within the stream, isolating the work area (de-watering), and moving fish according to methods described in the project-specific BAs. Disturbed riparian habitat will be restored through planting of native vegetation. Instream pools with potential for rearing habitat will be created, and fish passage will be restored as a result of the action with access to upstream spawning and rearing habitats.

1.5.1.3. Culvert Retrofit

Culvert retrofitting will occur within various streams throughout of western and central Oregon. This proposed action will include low and high gradient stream channels where the culvert

gradient is inconsistent with that of the stream channel and/or the flow within the culvert is high and smooth. The expected impacts from this action include temporary disruption of bed-load movement of gravel, modification to the hydrology, increases in sedimentation and turbidity, streambank alteration, temporary displacement of listed fish, handling of listed fish associated with removal of the subject species from project-specific, isolated work areas (i.e., coffer dams, block netted areas, etc.), and long-term improvement to fish passage and habitat access.

Particular attention will be given to isolating any fresh concrete from flowing water until the concrete has cured, controlling fine sediment discharge from drilling operations for installing baffles, isolating the work area (de-watering), moving fish according to methods described in the project-specific BA, and conducting the work in a short period of time to limit any potential disturbance to migrating or rearing fish that may occur in the action area. Fish passage will be restored as a result of the work action with access to upstream spawning and rearing habitats.

1.5.1.4. Culvert Replacement - Bridge Option

Replacement of culverts with a bridge (single span) may occur within various streams throughout western and central Oregon. This proposed action will include low and high gradient stream channels where the culvert gradient is inconsistent with that of the stream, and/or the existing culvert is substantially elevated from the streambed and hydraulically inadequate. The expected impacts from this action include temporary increases in sedimentation and turbidity, temporary disruption of bed-load movement of gravel, modification to the hydrology, temporary displacement of listed fish, handling of listed fish associated with removal of the subject species from project-specific, isolated work areas (i.e., coffer dams, block netted areas, etc.), streambank alteration, temporary loss of riparian vegetation, and long-term improvement to fish passage, habitat access, and hydraulic functions.

Construction of bridges and approaches will increase the total amount of impervious surface area in the watershed. Although the amount of new impervious surface created by this culvert replacement option is not expected to substantially increase road density in a given watershed (substantial - greater than 150 square feet of new impervious surface for watersheds that drain less than 70 square miles), any increase in impervious surface can negatively impact the environmental baseline.

Particular attention will be given to controlling fine sediment discharge from the excavated materials that remain on site and to monitoring the operation of heavy equipment adjacent to and within the stream, isolating the work area (de-watering), and moving fish according to methods described in the project-specific BA. Disturbed riparian habitat will be restored through planting of native vegetation. The stream channel will be rehabilitated (restored to proper functioning condition in the long term), and fish passage will be restored as a result of the work action with access to upstream spawning and rearing habitat.

1.5.2. Effects of Individual Project-Specific Actions

The effects of each individual project will vary depending on the location and site characteristics. The effects will be provided in the project-specific BAs.

1.5.3. Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." For the purposes of this analysis, the general action areas are the watersheds containing the project. Future Federal actions, including the ongoing operation of hydro power systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. In addition, non-Federal actions that require authorization under section 10 of the ESA will be evaluated in section 7 consultations. Therefore, these actions are not considered cumulative to the proposed action.

Non-Federal actions are expected to occur throughout the project-specific action areas to various intensity or degree. The NMFS expects that the character or intensity of the non-Federal actions to be similar to those of the past. The NMFS is not aware of any non-Federal actions reasonably certain to occur that will significantly increase adverse affects to the listed species. The NMFS will analyze cumulative effects based on specific and new information as submitted in the project-specific BAs.

1.6. Effects on Critical Habitat

NMFS designates critical habitat based on the physical features that are essential to the listed species. Essential features for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage. Critical habitat for the subject species consists of all waterways below naturally-occurring impassable barriers, including the project-specific action areas. The adjacent riparian zone is also included in the designation. The adjacent riparian zone is defined as the area that provides the following functions: Shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter.

The proposed actions will impact critical habitat. In the short term, a temporary increase in sedimentation and turbidity, gravel compaction, and loss of riparian habitat are expected. In the long term (greater than five years), newly planted riparian vegetation will mature, providing near shore habitat functions. Long-term effects of the fish passage remediation actions are expected to improve hydraulic functions and permit fish passage to upstream spawning and rearing habitats. The NMFS expects that these actions will maintain or restore the value of the critical habitat for survival of the subject species.

1.7. Conclusion

NMFS expects, based on the available information, that individual projects that are consistent with the requirements set forth in the programmatic BA is not likely to jeopardize the continued existence the subject species or adversely modify their critical habitat. NMFS will confirm this biological opinion for individual projects on a case-by-case basis after it has considered the site-specific information for each project provided in each project-specific BA.

NMFS used the best available scientific and commercial data in this report to evaluate effects of the proposed actions on the subject species and the environmental baseline for the action area, and will do so when it reviews each project-specific BA in the future. This conclusion is based on the fact that although each project may cause short-term impacts to anadromous salmonids and their habitats due to increased sedimentation and disturbance or mortality from inwater construction, in the long term, these projects will provide significant benefits to listed salmon and their habitats by reducing existing impediments to passage. Direct mortality from these projects are anticipated to be more than negligible in some individual cases.

1.8. Conservation Recommendations

Section 7 (a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of the threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse affects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. In addition to those general minimization and avoidance measures as described in the programmatic BA, the NMFS recommends no additional conservation recommendations.

1.9. Reinitiation of Consultation

Based on information presented in the amended programmatic BA and new requirements for essential fish habitat consultation (EFH) under the Magnuson-Stevens Act (MSA), NMFS is issuing the enclosed amended biological report and streamlining process for the ODOT fish passage remediation program. The FHWA may ask NMFS to confirm this biological report as a biological opinion issued through formal section 7 consultation under the ESA and as an EFH consultation under the MSA for proposed projects within these action categories which are funded by the FHWA. Such future requests will need to be in writing. NMFS will review the request for any significant differences between the planned action and actions analyzed in the biological report, including information used to prepare that report. If NMFS finds no substantative differences, it will confirm the biological report as a biological opinion and EFH consultation for that project. No further ESA or MSA consultation would be necessary. If differences are found, NMFS may develop a new biological opinion and incidental take statement, or EFH conservation recommendations as appropriate.

After any subsequent confirmation of this biological report, the FHWA shall request reinitiation of ESA and MSA consultation if: (1) The amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action may affect the subject species or critical habitat in a manner or to an extent not considered in this biological report; (3) the action is subsequently modified in a manner that causes an effect to the subject species or critical habitat that was not considered in this biological report; or, (4) a new species is listed or critical habitat designated that may be affected by the action.

2. PROSPECTIVE INCIDENTAL TAKE STATEMENT

The incidental take statement provided in this biological report does not become effective until it is confirmed as a biological opinion issued through formal consultation. Future individual projects, the project will be reviewed to determine whether any modifications of the opinion and incidental take statement may be appropriate. No take of the species may occur prior to confirmation of the biological report through formal consultation.

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patters such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement which has been incorporated and possibly modified by a subsequently issued biological opinion for an individual or batch of projects.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

2.1. Amount or Extent of the Take

The NMFS anticipates that the category of actions contained herein have more than a negligible likelihood of resulting in incidental take to the subject species. The potential for take has been significantly reduced through the application of BMPs and the terms and conditions for implementing the reasonable and prudent measures. Therefore, even though NMFS expects some low level of incidental take to occur due to the actions covered by this biological report, the

best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the subject species itself. In instances such as these, the NMFS designates the expected level of take as unquantifiable. Based on the information provided, NMFS anticipates that an unquantifiable but low level of incidental take can occur as a result of the actions covered by this biological report. The NMFS determined that this low level of anticipated take is not likely to result in jeopardy to the subject species or result in the destruction or adverse modification of critical habitat.

2.2. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measure(s) are necessary and appropriate to minimizing take of the subject species specified in this biological report.

The FHWA/ODOT shall:

1. Minimize the likelihood of incidental take by ensuring that all projects meet ODFW fish passage criteria.

2. Minimize the likelihood of incidental take by ensuring that stream and riparian habitat in the project-specific action areas are restored to a properly functioning condition.

3. Minimize the likelihood of incidental take by ensuring that culvert replacements are sufficiently large to maintain a natural streambed, allow for passage of wood and debris, and not impair stream migration.

4. Minimize the likelihood of incidental take by ensuring that each activity is maintained, monitored, and modified as necessary to maintain long term fish passage and habitat access.

5. Minimize the likelihood of incidental take by ensuring that the amount and extent of incidental take from the construction activities within the proposed project-specific action areas limit the duration and extent of inwater work, and time such work to occur when the impacts to fish are minimized.

6. Minimize the likelihood of incidental take by ensuring that the amount and extent of incidental take from construction activities in or near all waterbodies avoid or minimize petrochemical contamination of waterbodies and increases in sedimentation and turbidity by implementing a spill containment, prevention and control plan, and stabilizing all exposed and disturbed areas over both the shortterm and the longterm.

7. Minimize the likelihood of incidental take by ensuring that stormwater runoff from all new impervious surfaces are appropriately treated.

8. Minimize the likelihood of incidental take by ensuring that excess excavated road-base materials are removed and disposed off site.

2.3. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, FHWA/ODOT must comply with the following terms and conditions specified in this biological report which implement the reasonable and prudent measures described in this biological report. These terms and conditions are non-discretionary.

1. To implement Reasonable and Prudent Measure #1, above, the FHWA/ODOT shall:

    a. Ensure that within the first year after completion of the project that the remediation structure is inspected during low water and high water levels to ensure that ODFW fish passage standards are met for adult and juvenile salmonids.

2. To implement Reasonable and Prudent Measure #2, above, the FHWA/ODOT shall:

    a. Ensure that all instream habitat altered by the actions are restored to properly functioning condition.

    b. Ensure that all riparian habitat altered by the actions are planted with native riparian vegetation, and monitored for three years with a success rate of 80%.

3. To implement Reasonable and Prudent Measure #3, above, the FHWA/ODOT shall:

    a. Ensure that when replacing the culvert, the culvert meets or exceeds ODFW fish passage standards (ODFW 1997), incorporates open or simulated streambed bottom, and exceeds the width of the active channel.

4. To implement Reasonable and Prudent Measure #4, above, the FHWA/ODOT shall:

    a. Ensure that for three years following completion of the fish passage remediation action, the structure is monitored and inspected for proper fish passage.

    b. Ensure that for three years following the completion of the fish passage remediation action, periodic observations or indications of actual fish movement past and upstream of the structure are recorded.

    c. Ensure that an annual report presenting the results of the monitoring and inspections at the fish passage remediation site is submitted to the NMFS at the end of the calendar year for three years following the completion of the

remediation action. These reports shall include sufficient detail to demonstrate consistency with ODFW fish passage standards (ODFW 1997), provide assessment of fish access and utilization of upstream habitat, and indicate any maintenance actions that were taken to maintain fish passage.

5. To implement Reasonable and Prudent Measure #5, above, the FHWA/ODOT shall:

   a. Ensure that site-specific conditions and available information concerning the actual presence of listed fish shall be consider when defining the actual inwater work period.

   b. Ensure that in order to minimize the potential for direct mortality, the handling of fish, in association with removal, shall be limited to the extent possible. Every effort shall be implemented to ensure that fish captured are kept alive and reinstated downstream immediately after capture.

6. To implement Reasonable and Prudent Measure #6, above, the FHWA/ODOT shall:

   a. Ensure that Best Management Practices (BMPs) for minimizing erosion and pollution control are fully implemented and maintained (Enclosure 1).

   b. Ensure that erosion control measures are implemented to minimize long term erosion potential, and maintained until erosion potential is eliminated.

7. To implement Reasonable and Prudent Measure #7, above, the FHWA/ODOT shall:

   a. Ensure that water quality and quantity from new impervious surfaces for stormwater runoff is fully treated. Fully treated is defined as: Infiltrate with pretreatment all stormwater runoff associated with new impervious surfaces, or water quantity shall treat 1.40 times the new impervious surface area; water quality shall be treated at 100%.

8. To implement Reasonable and Prudent Measure #8, above, the FHWA/ODOT shall:

   a. Ensure that excavation of excess road-base materials are not reinstated within the 100 year floodplain. Excess road-base materials shall be hauled off site to an approved and permitted location, and at least 300 feet from any waterbody.

3. MAGNUSON-STEVENS ACT

Pursuant to the MSA, the PFMC has designated freshwater and marine EFH for chinook and coho salmon (PFMC 1999), EFH for five species of coastal pelagic species (PFMC 1998b), and a

"composite" EFH for 62 species of groundfish (PFMC 1998b). For purposes of this consultation, freshwater EFH for chinook and coho salmon in Oregon includes all streams, lakes, ponds, wetlands, and other water bodies currently or historically accessible to chinook or coho salmon, except upstream of the following impassable dams: Opal Springs, Big Cliff, Cougar, Dexter, Dorena, Soda Springs, Lost Creek, Applegate, Bull Run, Oak Grove, and the Hells Canyon Complex. In the future, should subsequent analyses determine the habitat above any of these dams is necessary for salmon conservation, the PFMC will modify the identification of Pacific salmon EFH (PFMC 1999). Marine EFH for chinook and coho salmon in Oregon includes all estuarine, nearshore and marine waters within the western boundary of the U.S. Exclusive Economic Zone (EEZ), 200 miles offshore. EFH for coastal pelagic species and composite EFH for groundfish in Oregon includes all waters, substrates and associated biological communities from the mean higher high water line, the upriver extent of saltwater intrusion in river mouths, and along the coast extending westward to the boundary of the EEZ.

The Magnuson-Stevens Act requires consultation for all actions that may adversely affect EFH, and it does not distinguish between actions in EFH and actions outside EFH. Any reasonable attempt to encourage the conservation of EFH must take into account actions that occur outside EFH, such as upstream and upslope activities that may have an adverse effect on EFH. Therefore, EFH consultation with NMFS is required by Federal agencies undertaking, permitting or funding activities that may adversely affect EFH, regardless of its location.

The consultation requirements of section 305(b) of the Magnuson-Stevens Act (16 U.S.C. 1855(b)) provide that:

- Federal agencies must consult with NMFS on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH;

- NMFS shall provide conservation recommendations for any Federal or State activity that may adversely affect EFH;

- Federal agencies shall within 30 days after receiving conservation recommendations from NMFS provide a detailed response in writing to NMFS regarding the conservation recommendations. The response shall include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with the conservation recommendations of NMFS, the Federal agency shall explain its reasons for not following the recommendations.

3.1. Identification of Essential Fish Habitat

Designated salmon EFH includes all those streams, lakes, ponds, wetlands, and other water bodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except above the impassable barriers identified by PFMC (PFMC 1999). Salmon EFH excludes areas upstream of longstanding naturally impassable barriers (i.e., natural

waterfalls in existence for several hundred years). In the estuarine and marine areas, proposed designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the EEZ (200 miles) offshore of Washington, Oregon, and California north of Point Conception (PFMC 1999).

3.2. Proposed Action

The proposed actions are described in the programmatic BA and the biological report.

3.3. Effects of the Proposed Action

In the short term, a temporary increase in sedimentation and turbidity, gravel compaction, and loss of riparian habitat are expected. In the long term (greater than five years), newly planted riparian vegetation will mature, providing near shore habitat functions. Long-term effects of the fish passage remediation actions are expected to improve hydraulic functions and permit fish passage to upstream spawning and rearing habitats for salmonids.

3.4. Conclusion

Using the best scientific information available, NMFS has determined that the proposed actions may adversely affect EFH for salmon, groundfish and coastal pelagic species.

3.5. EFH Conservation Recommendation

NMFS recommends that the reasonable and prudent measures and the terms and conditions which implement them that are listed above in Part Two INCIDENTAL TAKE STATEMENT, sections B and C above, be adopted as EFH conservation recommendations. Should these EFH conservation recommendations be adopted, potential adverse affects to EFH would be minimized.

A Federal action agency must provide a detailed, written response to NMFS within 30 days after receiving to EFH conservation recommendation. 50 CFR section 600.920(j). The response must include a description of measures proposed by the agency to avoid, minimize, mitigate or offset the impact of the activity on EFH. If the response is inconsistent with a conservation recommendation from NMFS, the agency must explain its reasons for not following the recommendation.

3.6. Consultation Renewal

The FHWA/ODOT must reinitiate EFH consultation with NMFS if the category of actions are substantially revised in a way that may adversely affect EFH, or if new information becomes available that affects the basis for NMFS' EFH conservation recommendations. 50 CFR Section 600.920(k).

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ENCLOSURE I

ODOT'S GENERAL MINIMIZATION AND AVOIDANCE MEASURES

In-water Work

Passage shall be provided for both adult and juvenile forms of all salmonid species throughout the construction period. ODOT designs will ensure passage of fishes as per ORS 498.268 and ORS 509.605.

1. All work within the active channel of all anadromous fish bearing systems, or in systems which could potentially contribute sediment or toxicants to downstream fish bearing systems, will be completed within ODFW's inwater work period. This inwater work period varies by system. Any extensions of the inwater work period will first be approved by and coordinated with ODFW and NMFS.

2. During ODOT project design, ODOT will work to minimize the amount of riprap (clean, non-erodible, upland angular rock) used, and will incorporate bioengineering technology into design standards, when appropriate.

3. Alteration or disturbance of stream banks and existing riparian vegetation will be minimized. Where bank work is necessary, bank protection material shall be placed to maintain normal waterway configuration. Waterway bank slopes will be left no steeper than 1:2.

4. In areas with riprap installation, larger riprap (class 350 metric minimum) will be used, and would not constrict the size of the active channel. Placement will be performed "in the dry" as much as possible, and from top-of-bank where possible. Riprapped areas will be planted with willow stakes (and other riparian shrubs/ tress) to increase shading and cover, where appropriate. Willow stakings will be of a species appropriate for the physiographic province and will be planted at an approximate density of 2000/ ha (generally).

Erosion Control

For all projects with the potential to contribute sediment to aquatic resources, an Erosion Control Plan (ECP) will be prepared by ODOT's Erosion Control Team and implemented and maintained by the Contractor. The ECP will outline how and to what specifications various erosion control devices will be installed to meet water quality standards, and will provide a specific inspection protocol and time response. Turbidity shall not exceed ten percent above ambient conditions (measured 100 feet upstream of all construction activities).

1. Erosion Control measures shall include (but not be limited to) the following:

   a. Sediment detention measures such as placement of weed-free straw bales and silt fences at the bottom of newly constructed slopes.

   b. Construction of sediment settling basins where appropriate. Berms shall be constructed where appropriate, to divert runoff into these basins.

   c. Temporary plastic sheeting for immediate protection of open areas (where seeding/ mulching are not appropriate).

   d. Erosion control blankets or heavy duty matting (e.g., jute) may be used on steep unstable slopes.

   e. Sills or barriers may be placed in drainage ditches along cut slopes and on steep grades to trap sediment and prevent scouring of the ditches. The barriers will be constructed from rock and straw bales.

   f. Biobags, weed-free straw bales and loose straw may be used for temporary erosion control. Temporary erosion and sediment controls will be used on all exposed slopes during any stop in work on exposed slopes.

2. Effective erosion control measures shall be in place at all times during the contract. Construction within the five year floodplain will not begin until all temporary erosion controls (e.g., straw bales, silt fences) are in place, downslope of project activities within the riparian area. Erosion control structures will be maintained throughout the life of the contract.

3. All temporarily exposed areas will be seeded and mulched. Erosion control seeding and mulching, and placement of erosion control blankets and mats (where applicable) will be completed on all areas of bare soil within seven days of exposure within 100 feet of waterways, wetlands or other sensitive areas, and in all areas during the wet season (after October 1). All other areas will be stabilized within 14 days of exposure. Efforts will be made to cover exposed areas as soon as possible after exposure.

4. All erosion control devices will be inspected during construction to ensure that they are working adequately. Erosion control devices will be inspected daily during the rainy season, weekly during the dry season, monthly on inactive sites. Work crews will be mobilized to make immediate repairs to the erosion controls, or to install erosion controls during working and off-hours. Should a control measure not function effectively, the control measure will be immediately repaired or replaced. Additional controls will be installed as necessary.

5. If soil erosion and sedimentation resulting from construction activities is not effectively controlled, the Engineer will limit the amount of disturbed area to that which can be adequately controlled.

6. Sediment will be removed from sediment controls once it has reached 1/3 of the exposed height of the control. Whenever straw bales are used, they will be staked and dug into the ground five inches. Catch basins shall be maintained so that no more than six inches of sediment depth accumulates within traps or sumps.

7. Sediment-laden water created by construction activity shall be filtered before it leaves the right-of-way or enters an aquatic resource area. Silt fences or other detention methods will be installed as close as possible to culvert outlets to reduce the amount of sediment entering aquatic systems.

8. A supply of erosion control materials (e.g., straw bales and clean straw mulch) will be kept on hand to cover small sites that may become bare and to respond to erosion emergencies.

9. All equipment that is used for instream work will be cleaned prior to entering the floodplain. External oil and grease will be removed (off site), along with dirt and mud. Untreated wash and rinse water will not be discharged into streams and rivers.

10. On cut slopes steeper than 1:2 a tackified seed mulch will be used so that the seed does not wash away before germination and rooting occurs. In steep locations, a hydro-mulch will be applied at 1.5 times the rate.

11. Material removed during excavation shall only be placed in locations where it cannot enter sensitive aquatic resources. Conservation of topsoil (removal, storage and reuse) will be employed.

12. Measures will be taken to prevent construction debris from falling into any aquatic resource. Any material that falls into a stream during construction operations will be removed in a manner that has a minimum impact on the streambed and water quality.

Hazmat

1. ODOT actions will follow all provisions of the Clean Water Act (40 CFR Subchapter D) and DEQ's provisions for maintenance of water quality standards not to be exceeded within the Rogue Basin (OAR Chapter 340, Division 41). Toxic substances shall not be introduced in waters of the state in amounts which may be harmful to aquatic life. Any turbidity caused by this project shall not exceed DEQ water quality standards.

2. The Contractor will develop an adequate, site-specific Spill Prevention and Countermeasure or Pollution Control Plan (PCP), and is responsible for containment and removal of any toxicants released. The Contractor will be monitored by the ODOT Engineer to ensure compliance with this PCP. Turbidity measuring greater than ten percent above background levels will not be acceptable. No toxicants, including green concrete, will be allowed to enter any aquatic resource.

3. No toxic substances will be stored or transferred within 300 feet of any waterbody. Areas for fuel storage, refueling and servicing of construction equipment and vehicles will be located at least 300 feet away from any waterbody.

    a. Hazmat booms will be available on site for use as needed in all aquatic systems where:

    b. Significant inwater work will occur, or where significant work occurs within the five year floodplain of the system, or where sediment/toxicant spills are possible.

    c. The aquatic system can support a boom setup (i.e., the creek is large enough, low-moderate gradient).

    d. A significant aquatic resource (may include estuaries, spawning areas, or rearing areas) occurs downstream or within the action area.

4. Hazmat booms will be maintained on site in locations where "diapering" of vehicles to catch any toxicants (oils, greases, brake fluid) will be mandated when the vehicles have any potential to contribute toxic materials into aquatic systems.

5. No surface application of nitrogen fertilizer will be used within 50 feet of any aquatic resource.

Riparian issues

1. Where appropriate, boundaries of the clearing limits will be flagged by the project inspector of ODOT. Ground will not be disturbed beyond the flagged boundary.

2. Alteration of native vegetation will be minimized. Where possible, native vegetation will be clipped by hand so that roots are left intact. This will reduce erosion while still allowing room to work. No protection will be made of invasive exotic species (e.g., Himalayan blackberry)

3. All vegetated areas that are cleared within the riparian corridor will have a replanting plan which is appropriate for the local overstory and understory plant community. The replanting plan will emphasize endemic riparian species.

4. Riparian overstory vegetation removed will have a replacement rate of 1.5:1. Replacement will occur within the project vicinity where possible and within the watershed at a minimum.

5. ODOT will require a contract grow period for all riparian mitigation plantings. In extremely unstable or unproductive areas, ODOT may release the Contractor from the contract grow period and develop a larger replanting area to compensate for this.

Monitoring

1. All riparian replant areas, streambank and channel restoration/enhancement actions, and off-channel mitigation sites will be monitored to insure the following:

    a. Finished grade slopes and elevations will perform the appropriate role for which they were designed.

    b. Log and rock structures are placed appropriately and adequately secured.

    c. Plantings are performed correctly and have a success rate of 80 percent.

2. Mitigation site monitoring will ensure that mitigation commitments have an adequate success rate to replace the functions they were designed to replace. ODOT Biology staff will produce post-construction and biannual reports on success of mitigation sites to be submitted to NMFS at the end of the calendar year following completion of the mitigation for three years.

3. Failed plantings and structures will be replaced.

4. ODOT will require an establishment period for all riparian mitigation plantings. In extremely unstable or unproductive areas, ODOT may develop a larger replanting area to compensate for this.